Version A

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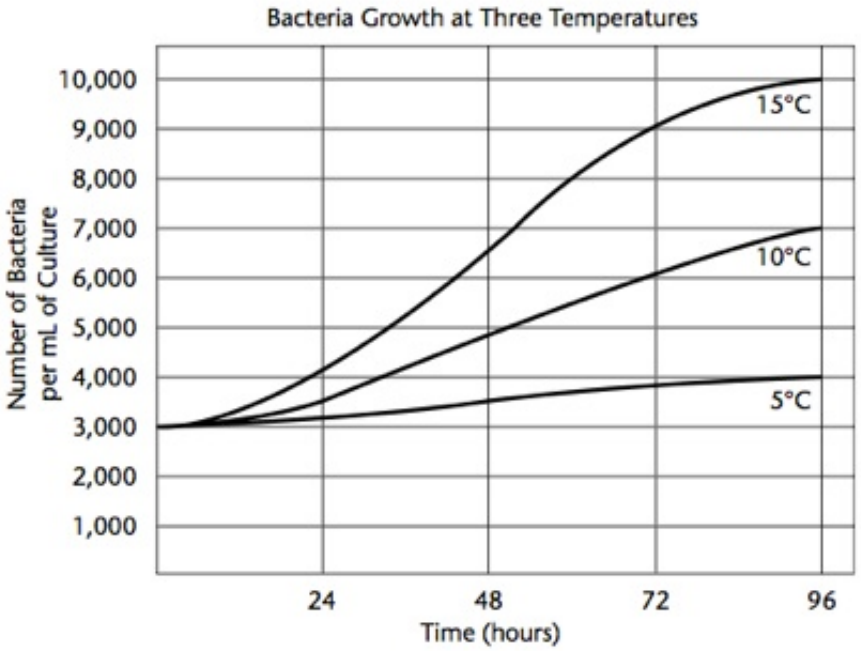
History of Life Unit Final - ElShakhs Essay portion

1. Type the names of the eight levels of groups that biologists use to classify organisms. Arrange these levels in order from the broadest category to the most specific at the bottom. What is Linnaeus's naming system called and which levels in the chart are included in this naming system? (10 points)



2. Interpreting Graph: What was the increase in number of bacteria per mL of culture after four days at each temperature? (5 points)

3. Writing Hypotheses: Write a hypothesis regarding rate of bacteria growth and temperature that explains the graphed results. Please use "If...then...because" format. (5 points)

4. Describe how bacteria become resistant to antibiotics and include why it is important to take the full dose of antibiotics prescribed by your doctor to treat Streptococcus pharyngitis. (5 points)

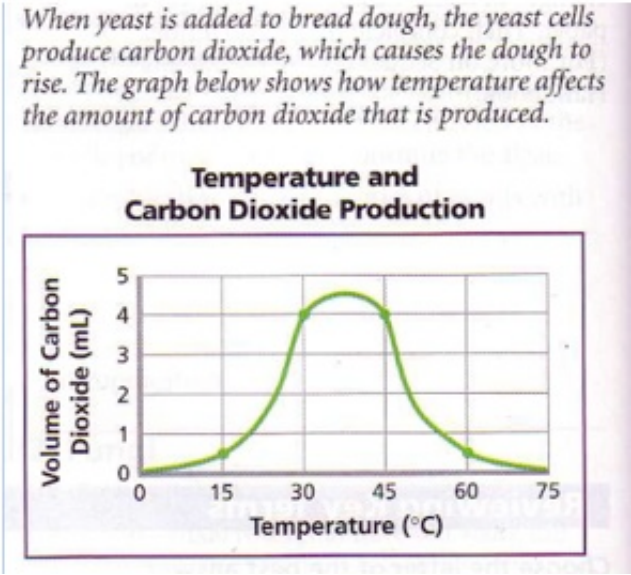
5. Carl Woese and George Fox proposed a hypothesis, which has been upheld since the late 1970s, that described ancient organisms that were very likely the first living things to inhabit the earth. What did he call these organisms and how did he describe these early life forms? Include in your answer the type of environment these organisms lived in 3.5 billion years ago. (5 points)

6. If all algae suddenly disappeared from Earth's waters, what would happen to living things on Earth? Explain your answer. (5 points)

7. What is metabolism? Describe two processes (one that is aerobic and the other anaerobic) whereby baker's yeast cells metabolize sugars to get energy in the form of ATP. (5 points)

8. Drawing conclusions: Using evidence from the graph, explain how temperature affects the amount of carbon dioxide that yeast cells produce. In your explanation, include details about what is happening to C02 between 0-15, 15-30, 30-45, 45-60, and 60-75 degrees Celsius. (5 points)

When yeast is added to bread dough, the yeast cells produce carbon dioxide, which causes the dough to rise. The graph below shows how temperature affects the amount of carbon dioxide that is produced.



9. Are viruses living things? Scientists debate the answer to this question. Please choose your answer (yes or no) and support your claim with three reasons. Hint: Include in your answer your understanding of how viruses operate and use the characteristics listed above that separate living things from non-living things. (5 points)

10. Describe in complete sentences three ways that bacteria are helpful to humans. (5 points)

11. Describe in complete sentences three diseases that are caused by microbes and how these diseases have changed society in the past or present. In your description, include the name of the microbe, the symptoms of the disease, and how the disease is spread. (10 points)

12. What causes food to spoil? Describe three methods humans use to extend the "shelf-life" of food and explain why each method works to preserve food. (10 points)

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Answer Sheet

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1. *Answers may vary*
2. *Answers may vary*
   Sample Answer: 15 degrees C: 7000 10 degrees C: 3000 5 degrees C: 1000
3. *Answers may vary*
   Sample Answer: If this bacteria is grown in three temperatures: 5 degrees C, 10 degrees C, and 15 degrees C, then bacteria will grow more rapidly at the 15 degrees C because the bacteria have adapted to this temperature and can more easily maintain homeostasis.
4. *Answers may vary*
   Sample Answer: When antibiotics are overused, bacteria who have traits that resist these antibiotics have a chance to reproduce and pass on resistance to their offspring until the resistant bacteria is much more pervasive in the world. When you don't take the full dose of antibiotics, you will have a few surviving bacteria that can reproduce and pass on that resistance to their offspring, growing the bacteria population in your throat that are resistant to the antibiotic. If you take a full dose, you have a better chance of eliminating most of the bacteria, allowing your body to hopefully eliminate the few remaining antibiotic resistant cells.
5. *Answers may vary*
6. *Answers may vary*
7. *Answers may vary*
8. *Answers may vary*
9. *Answers may vary*
10. *Answers may vary*
11. *Answers may vary*
12. *Answers may vary*